PATENT CLAIMS

1. (Amended) An apparatus comprising electronic and/or optoelectronic circuitry for implementing electronic and/or optical functions, wherein the circuitry is realized and/or integrated in two or more dimensions, the circuitry contains elements , the elements interfacing in a predetermined pattern , where the circuitry is formed from intersections in physical or near physical contact between the elements thereof, the predetermined pattern is generated by integrating physically two or more of said elements in a fabric-like structure and/or between the apparatus and its surroundings where some of said elements according to their material properties form electrical or optical transmission lines or isolators in said circuitry, the transmission lines conveying respectively electrical or optical energy between points and/or areas in the fabric-like structure, where some of said elements comprise spatially defined extended active regions, and , where some of said elements in portions of said fabric-like structure are adapted for emitting or absorbing or exchanging energy .

2. (Amended) The apparatus according to claim 35, wherein the pattern is a two-dimensional fabric-like structure.

3. (Amended) The apparatus according to claim 35, wherein the pattern is a three-dimensional fabric-like structure.

4. (Amended) The apparatus according to claim 35, wherein the elements are arranged such that the positions of the ends of the elements define a spatial grid.

5. (Amended) The apparatus according to claim 35, wherein some elements are twisted pair transmission lines .

6. (Amended) The apparatus according to claim 35, wherein some elements are transmission lines that are coaxial cables.

7. (Amended) The apparatus according to claim 35, wherein some elements are stripline transmission lines .

8. (Amended) The apparatus according to claim 35, wherein some elements are optical fibre transmission lines .

Clean Version

9. (Amended) The apparatus according to claim 35, wherein the elements have active regions that are defined by exposing portions of the elements to the encompassing environment.

10. (Amended) The apparatus according to claim 35, wherein said element has an active region that is extended lengthwise therein.

11. (Amended) The apparatus according to claim 35, wherein said element has an active region that corresponds to an end thereof.

12. (Amended) The apparatus according to claim 35, wherein some of the elements are provided with a protective shielding or cladding, the active regions in these elements being provided by removing the shielding or cladding at selected portions thereof.

13. (Amended) The apparatus according to claim 35, wherein the active regions of the elements are provided in selected portions of the elements exposed in the surface of the fabric-like structure or protruding therefrom at selected locations thereof.

14. (Amended) The apparatus according to claim 35, wherein the active regions of the elements are defined by exposing portions thereof to spatially selective physical or chemical influences.

15. (Amended) The apparatus according to claim 14, having at least two transmission lines wherein at least one transmission line is a conductor embedded in an exterior cladding composed of an organic semiconducting material, where active regions are defined by contact between transmission lines, and where semiconducting junctions are formed at the contact points of said intersections.

16. (Amended) The apparatus according to claim 15, wherein the semiconducting junctions are formed spontaneously upon contact.

17. (Amended) The apparatus according to claim 15, wherein at least one semiconducting junction is a diode junction.

18. (Amended) The apparatus according to claim 15, wherein the organic semiconducting material is a semiconducting polymer.

19. (Amended) The apparatus according to claim 35, wherein some of the elements, having characteristic lengths, are shielded over a portion of the

lengths against exchange of energy between elements or the exterior surroundings, where one or more unshielded portions are adapted to enable exchange of energy through the unshielded portions.

20. (Amended) The apparatus according to claim 19, wherein the unshielded portions of the elements are located at the intersections thereof.

21. (Amended) The apparatus according to claim 19, wherein the apparatus is a two- or three-dimensional optoelectronic display where the unshielded portions emit light at predetermined intensities, frequencies, and locations.

22. (Amended) The apparatus according to claim 21, wherein at least one of the elements is a signal transmission line that carries the predetermined intensities and frequencies to predetermined locations in the pattern.

23. (Amended) The apparatus according to claim 22, wherein the display is a two-dimensional display, wherein the elements form a two-dimensional array of equally spaced elements.

24. (Amended) The apparatus according to claim 23, wherein the intersections are adapted for absorption or emission of electrical or optical energy.

25. (Amended) The apparatus according to claim 24, wherein a portion of at least one element in an intersection is a pixel of the display.

26. (Amended) The apparatus according to claim 22, wherein the display is a three-dimensional display, wherein the elements are provided in a three-dimensional array of equally spaced elements.

27. (Amended) The apparatus according to claim 26, wherein the elements intersect in a spatial regular pattern or grid, where some elements in the pattern are adapted for emitting or absorbing electrical or optical energy.

28. (Amended) The apparatus according to claim 26, wherein a portion of at least one element in an intersection is a pixel of the display.

29. (Amended) The apparatus according to claim 26, wherein active regions of the elements are provided in selected portions of the element exposed in the surface of the fabric-like structure or protruding therefrom at selected locations

thereof, where the active regions are pixels in the display, said active regions being either a loop-like portion of an element or an end.

30. (Amended) The apparatus according to claim 35, wherein the pattern contains elements that are discrete electronic, optoelectronic or optical devices or combinations thereof.

31. (Amended) The apparatus according to claim 30, wherein one or more of the discrete devices are physical or chemical sensors connected to at least one of the elements.

32. (Amended) The apparatus according to claim 35, wherein one or more of the elements are a physical or chemical sensors.

34. (Amended) The method according to claim 43, further comprising

providing the surface of the elements with a shielding or cladding material before arranging the elements ; and

removing some shielding or cladding material, after arranging the elements , from some elements or from selected portions thereof at selected locations to form some of the active regions.

35. A web of circuitry comprising:

at least two circuit elements, each having ends;

at least one physical intersection of said elements, where the intersection does not occur at the ends of said elements; and

a predetermined circuit pattern, where said elements are arranged in multiple-dimensions according to said pattern, where the intersection is a point of communication between elements, where the intersections and varying properties of the elements form active regions, where the active regions are associated with circuitry in the pattern, where at least one element is a transmission line or an isolator and

where said elements are arranged in said predetermined circuit pattern by integrating said elements using weaving, knitting, crocheting, knotting, or stitching.

36. The apparatus of claim 35, wherein at least one intersection and associated elements form an active region where the physical properties of the elements result in the absorption or emission of energy in the region.

37. The apparatus of claim 35, wherein at least one intersection allows electronic communication between the elements associated with the intersection.

38. The apparatus of claim 35, wherein one element is composed of a transparent material.

39. The apparatus of claim 35, wherein one element is composed of a conducting material.

40. The apparatus of claim 35, wherein one element is composed of a semi-conducting material.

41. The apparatus of claim 36, wherein the intersection absorbs electrical or optical energy.

42. The apparatus of claim 36, wherein the intersection absorbs chemical or mechanical energy.

43. A method of forming a web of circuitry comprising:

providing a predetermined circuit pattern, where the pattern describes the use of predetermined elements intersected to form a textile-like web of circuitry, where the intersections and varying properties of the elements form active regions, where the active regions are associated with circuitry in the pattern;

providing the elements needed in the pattern, where the elements have ends;

arranging the elements in multiple-dimensions according to said pattern; and

intersecting the elements, where at least one intersection(s) occurs in places other than at the ends of the elements, where one active region acts as a transmission line, and where other active regions in combination result in the web of circuitry, where the electronic elements are arranged by integrating the elements using weaving, knitting, crocheting, knotting, or stitching.

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44. The method of claim 43, wherein at least one intersection and associated elements form an active region where the physical properties of the elements result in the absorption or emission of energy in the region.

45. The method of claim 44, wherein some elements have associated intersections that allow electronic communication between the elements associated with the intersections.

46. The method of claim 43, wherein one element is composed of a transparent material.

47. The method of claim 43, wherein one element is composed of a conducting material.

48. The method of claim 43, wherein one element is composed of a semi-conducting material.

49. The method of claim 44, wherein the intersection absorbs electrical or optical energy.

50. The method of claim 44, wherein the intersection absorbs chemical or mechanical energy.

51. The apparatus of claim 1, wherein the interaction of two or more active regions results in a predetermined circuit process.

52. The apparatus of claim 51, wherein said circuit process is a switching process, coupling process, emitting process or an absorbing process.

53. The apparatus of claim 51, wherein said circuit process is a detecting process for detecting specific physical or chemical characteristics.

54. The apparatus of claim 51, wherein said circuit process is a display process for displaying visual information and/or images.